

**NETWORK DEVICE INTERFACE FOR DIGITALLY INTERFACING DATA  
CHANNELS TO A CONTROLLER VIA A NETWORK**

**ABSTRACT OF THE DISCLOSURE**

5           The present invention provides a network device interface and method for  
digitally connecting a plurality of data channels, such as sensors, actuators, and  
subsystems, to a controller using a network bus. The network device interface  
interprets commands and data received from the controller and polls the data channels  
in accordance with these commands. Specifically, the network device interface  
10 receives digital commands and data from the controller, and based on these  
commands and data, communicates with the data channels to either retrieve data in  
the case of a sensor or send data to activate an actuator. Data retrieved from the  
sensor is then converted by the network device interface into digital signals and  
transmitted back to the controller. In one advantageous embodiment, the network  
15 device interface uses a specialized protocol for communicating across the network bus  
that uses a low-level instruction set and has low overhead for data communication.

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